30884

S/171/61/014/004/001/003
E141/E465

15 2120

AUTHORS: Kostanyan, K.A., Kamalyan, S.A., Bezhanyan, S.A.

TITLE: The density of sodium borosilicate glasses in the diffused state

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. Khimicheskiye nauki, v.14, no.4, 1961, 319-327

TEXT: No literature data is available as yet for calculating the density of fused glasses especially on measuring the density of sodium borosilicate glasses. This physical property is most important for calculating the coefficient of surface tension, the viscosity, the electrical conductivity of glasses, etc. In the present investigation, the authors measured the density of 22 sodium borosilicate glasses of the system $Na_2O-B_2O_3-SiO_2$ at temperatures between 800 to 1000°C. A 15 mm diameter platinum sphere was suspended in the fused glass mass and measurements were carried out in an electric crucible furnace as well as in a silit furnace with four silit resistors. The density was calculated according to the following formula:

$$d_t = \frac{M_1 - (M_2 - 0.0001\sigma)}{V_t}$$

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E141/E465

The density of sodium ...

where d_t = the density of the fused glass mass (g/cm^3); M_1 is the weight of the sphere which is partly submerged in the fused tailpiece, in air (in g); M_2 is the weight of the sphere which is partly submerged in the fused tailpiece, in the fusion liquid (in g); σ = the surface tension (in dyne/cm); V_t is the volume of the sphere (in cm^3). Discrepancies between the calculated and analysed values were only of an order of 2.5%. In the temperature interval between 800 and 1000°C, a linear relationship exists between the density of the tested glasses and the temperature. Investigations were also carried out on the relationship between the density and the composition of glasses containing 40, 30, 20 and 10% Na_2O, at 1000°C. It was found that the density at this temperature increased with decreasing ratio $B_2O_3 : SiO_2$. Maxima were observed on the density isotherms when the Na_2O content was 10, 20 or 30%, the maximum being most marked at a 10% Na_2O content. The same type of changes in the density were also apparent at 800°C. There are 6 figures, 1 table and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The four most recent references to English language publications read as follows: Ref.4: L.Chartsis, W.Capps, S.Spinner, J. Am. Ceram. Soc. v.36,

Card 2/3

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E141/E465

The density of sodium ...

2, 35 (1953);
Ref.5: Pei-Ching Li, Anil C. Ghose, Gouq-Jen Su, Physics and Chemistry of Glass, v.1, 6, 198 (1960);
Ref.6: L.Chartsis, W.Capps, S.Spinner, J. Am. Ceram. Soc. v.35, 6, 155 (1952);
Ref.8: J.Biscoe, B.E.Warren, J. Am. Ceram. Soc. v.21, 287 (1938).

ASSOCIATION: Institut khimii Sovnarkhoza ArmSSR
(Institute of Chemistry Sovnarkhoz ArmSSR)

SUBMITTED: June 30, 1961

X

Card 3/3

MANVELYAN, M.G.; KOSTANYAN, K.A.; YERZNKYAN, Ye.A.

Transition of the refractory material of the glass furnace into a vitreous mass during electric melting of glass. Izv. AN Arm. SSR. Ser. tekh. nauk 14 no.5:55-60 '61. (MIRA 15:1)
(Glass furnaces)

KOSTANYAN, K.A.; SAAKYAN, K.S.

Electroconductivity of glasses of the system Na_2SiO_3 - SiO_2 in the fused state. Izv. AN Arm.SSR. Khim.nauk 14 no.5: 409-416 '61. (MIRA 15:1)

1. Institut khimii Sovnarkhoza Armyanskoy SSR.
(Glass--Electric properties)

MANVELYAN, Manvel Gareginovich; MELIK-AKHNAZARYAN, Ashot Fedorovich; KOSTANYAN, Kostan Artavazdovich; NALCHADZHYAN, Suren Oranesovich; YERZNKYAN, Yelena Amayakovna; ARUTYUNYAN, S.B., red. izd-va; GALSTYAN, V., tekhn. red.

[Glass manufacture in electric furnaces]Elektrovarka stakla. Erevan, Armianskoe gos.izd-vo, 1962. 221 p. (MIRA 16:3)
(Glass manufacture) (Electric furnaces)

MANVELYAN, Manvel Gareginovich; MELIK-AKHNAZARYAN, Ashot Fedorovich; KOSTANYAN, Kostan Artavazdovich; NALCHADZHYAN, Suren Oganesovich; YERZNKYAN, Yelena Amayakovna; ARUTYUNYAN, S.B., red.izd-va; GALSTYAN, V., tekhn. red.

[Electric glass founding]Elektrovarka stekla. Erevan, Armianskoe gos. izd-vo, 1962. 221 p. (MIRA 16:4)
(Glass manufacture)

KOSTANYAN, K. A.; YERZINKYAN, Ye. A.

"Investigation of electroconductance of K_2O-SiO_2 system glasses over a wide temperature range."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

MANVELYAN, M.G.; KOSTANYAN, K.A.; MARGARYAN, A.A.

"Erevanit" as a material for glass melting. Behavior of "erevanit" on heating. Izv. AN Arm.SSR. Khim.nauki. 16 no.3:291-295 '63. (MIRA 17:2)

1. Institut khimii Soveta narodnogo khozyaystva Armyanskoy SSR.

ACCESSION NR: AP4031752 S/0072/64/000/004/0005/0008

AUTHOR: Kostanyan, K. A. (Candidate of technical sciences); Geokchyan, O. K. (Engineer)

TITLE: Electrical conductivity of molten sodium-calcium-magnesium alumosilicate glass

SOURCE: Steklo i keramika, no. 4, 1964, 5-8

TOPIC TAGS: electrical conductivity, molten glass, glass, electrical property, sodium containing glass, calcium containing glass, magnesium containing glass, alumosilicate containing glass

ABSTRACT: This investigation was conducted to augment the already existing electrical conductivity data on glasses at temperatures beyond 1150 C. The measurements of electrical conductivity were conducted by the ac bridge method and by the probe method. The data obtained by both methods are in excellent agreement. The various glasses were made from pure and c.p. materials using washed quartz sand as silicon dioxide. It was found that the formula

Card 1/2

Card 2/2

KOSTANYAN, K.A.

Electric conductance of fused alkali-borate and alkali-silicate glasses. Izv. /n Arm.SSR Khim nauki 16 no.1:3-12 '63 (MIRA 17:8)

1. Institut khimii Soveta narodnogo khozyaystva Armyanskoy SSR.

KOSTANYAN, K.A.; AVETISYAN, E.M.;

Electric conductance of glasses of the system $Na_2O - B_2O_3 - SiO_2$ in the fused state. Izv. AN Arm SSR. Khim nauki 16 no.2:117-124 '63 (MIRA 17:8)

1. Institut khimii Soveta narodnogo khozyaystva ArmSSR.

KOSTANYAN, K.A.; SAAKYAN, K.S.; GEOKCHYAN, O.K.

Density and electric conductance of sodium-calcium-magnesium aluminosilicate glasses in a fused state. Izv. AN Arm.SSR.Khim. nauki 17 no.4:357-367 '64. (MIRA 18:6)

1. Nauchno-issledovatel'skiy institut khimii Gosudarstvennogo komiteta tsvetnykh i chernykh metallov pri Gosplane SSSR.

L 48607-65 EWP(e)/EWT(m)/EWP(t)/EWP(b) Pq-4 .WH

ACCESSION NR: AP5007848 S/0171/64/017/006/0613/0622

18

AUTHOR: Kostanyan, K. A.; Yerznkyan, Ye. A. 17B

TITLE: Investigation of the electroconductivity of glasses in the K_2O-SiO_2 system in a wide temperature range

SOURCE: AN ArmSSR. Izvestiya. Khimicheskiy nauki, v. 17, no. 6, 1964, 613-622

TOPIC TAGS: electric conductivity, glass, silicate glass

ABSTRACT: The basic electroconductivity patterns were studied over a wide temperature range. Eight K_2O-SiO_2 system glasses were prepared with compositions ranging from 82% SiO_2 and 18% K_2O to 60.5% SiO_2 and 39.5% K_2O. The electrical conductivity was measured in a temperature range from 100-1400°C. In the fused and highly viscous (500 degrees and higher) states the measurements were made by the ac bridge method using two types of cells: 1) a U-shaped quartz cell with flared edges and a high constant was used for high temperatures (900-1400 degrees) when the conductivity of the glass is great, and 2) a corundum "trough" with a low constant was used for low temperatures. The measurements were made in a platinum furnace. The change in the curve obtained from the results of the measurements reflected struc-

Card 1/2

L 49607-65

ACCESSION NR: AP5007848

tural transformations occurring in the glass upon transition from a solid state to a highly viscous one and then to a fused one. Orig. art. has: 5 figures, 6 tables, 7 equations.

ASSOCIATION: Yerevanskiy nauchno-issledovatel'skiy institut khimii (Yerevan Scientific Research Institute of Chemistry)

SUBMITTED: 15May64 ENCL: 00 SUB CODE: GC, MT

NO REF SOV: 010 OTHER: 006

Card 2/2

L 54728-65 EWP(e)/EWT(m)/EWP(t)/EWP(b) Pq-4 WH UR/0171/65/018/001/0003/0005
ACCESSION NR: AP5010260

19
18
B

AUTHOR: Kostanyan, K. A.; Yerznkyan, Ye. A.

TITLE: Electrical conductivity of molten fluoride glass

SOURCE: AN ArmSSR. Izvestiya. Khimicheskiye nauki, v. 18, no. 1, 1965, 3-5

TOPIC TAGS: glass, electric conductivity

ABSTRACT: The purpose of this work was to investigate the effect of fluorine on the electrical conductivity of molten glass. A comparison was made of two series of glass containing 14 and 17 weight % of Na_2O. In both series up to 7.5% fluorine was added at the expense of other oxides. To reduce the volatility of the fluorine, alumina and zinc oxide were added to the glass. The fluorine was added in the form of calcium fluoride. The electrical conductivity measurements were made by a previously described method [*Izv. AN ArmSSR, KhN*, 17, 613 (1964)]. Figure 1 of the Enclosure shows the results of the measurements of electrical conductivity in the two series of glass. The data indicates that in ordinary glass as well as in the glass containing fluorine the electrical conductivity is determined by the Na_2O content. In the absence of heavy ions (Ba^{++}, Pb^{++}, etc.) the electrical conductivity

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L 54728-65
ACCESSION NR: AP5010260

of fused glass may be described by the formula:

$$\log \chi = 1.508 - 0.0204C - \frac{4836 - 128C}{T}$$

where C is the content of sodium oxide in weight % and T is the absolute temperature. This formula gives satisfactory results in the 1100-1400°C interval when the content of Na_2O in the glass is between 12 and 20 weight %. Orig. art. has: 1 figure.

ASSOCIATION: Yerevanskiy nauchno-issledovatel'skiy institut khimii (Yerevan Scientific Research Institute of Chemistry)

SUBMITTED: 20May64 ENCL: 01 SUB CODE: MT, EM

NO REF SOV: 006 OTHER: 000

Card 2/2

L 02249-67

ACC NR: AR6023337 (A,N) SOURCE CODE: UR/0299/66/000/003/M031/M032

AUTHOR: Kostandyan, L. I.

22 12 B

TITLE: Experimental homoplastic transplantation of fetal bone

SOURCE: Ref zh. Biol, Part II, Abs. 3M193

REF SOURCE: Sb. Aktual'n vopr. kliniki i lecheniya ortopedo-trav-matol. bol'nykh. Kiev, Zdorovya, 1965, 274-278

TOPIC TAGS: rabbit, plastic surgery tissue transplant, bone

ABSTRACT: In 23 rabbits a diaphysis defect of the fibular bone 9 to 12 mm in length was replaced by stored homologous fetal bone from the periosteum. The transplant exceeded the dimensions of the defect by 1.0 to 2.0 mm. Histomorphological and X-ray examinations were conducted from 5 to 70 days following the operation. In 15 days a periosteal reaction was observed in the host's bone. In 30 days the newly formed bone covered and grew into the transplant which underwent gradual resorption. In 50 days the defect area was filled with newly formed spongy bone. By the 60th to 70th days the structural change process terminated with the formation of a clearly defined cortical layer and bone marrow canal. N. S. [Translation of abstract].

SUB CODE: 06

Card 1/1 UDC: 577.99

Experimental study of transplantation of auto-homo-and embryogenic bone. Acta chir. plast. (Praha) 7 no.1:62-69 '65.

1. Kazan Scientific Research Institute of Traumatology and Orthopaedics (Director: U.Y.Bogdanovitch), Department of Traumatology and Orthopaedics (Chief Surgeon: Prof. L.I. Shulutko) and Department of Radiology (Chief Radiologist: Prof. D.E. Goldshtejn) of the Central Postgraduate Medical School, Kazan, U.S.S.R.

KOSTANDYAN, L.I., mladshiy nauchnyy sotrudnik (Kazan', ul. Sverdlova, d.74, kv.2)

Experimental homotransplantation of fetal bone. Ortop., travm. i protez. 25 no.4:29-33 Ap '64 (MIRA 18:1)

1. Iz Kazanskogo instituta travmatologii i ortopedii (direktor - starshiy nauchnyy sotrudnik U.Ya. Bogdanovich), kafedry travmatologii i ortopedii (zav. - zasluzhennyy deyatel' nauki prof. L.I. Shulutko) i kafedry rentgenologii i radiologii (zav. - zasluzhennyy deyatel' nauki prof. D.Ye. Gol'dshteyn) Gosudarstvennogo instituta dlya usovershenstvovaniya vrachey imeni S.M. Kirova.

MALAYAN, S.V.; TUMANYAN, L.A.; KOSTANYAN, R.B.

Study of the effect of laser rays on the tunica oculi. Zhur. eksp. i klin. med. 5 no.1:33-37 '65. (MIRA 18:10)

KNIPPER, A.L.; KOSTANYAN, Yu.L.

Age of ultrabasites of the northeastern coast of Lake Sevan.
Izv. AN SSSR. Ser. geol. 29 no.10:67-79 O '64. (MIRA 17:11)

1. Geologicheskiy institut AN SSSR, Moskva.

KOSTANYANTS, BORIS ALEKSANDROVICH

GRIGOR'YEV, Vsevolod Ivanovich; KOSTANYANTS, Boris Aleksandrovich; RATNIEKS, August Indrikovich; BUSARINA, N.G., redaktor; KHELEMSKAYA, L.M., tekhnicheskiy redaktor

[Apparatus for subscribers to the telegraph system; information manual] Apparatura abonentskogo telegrafa; informatsionnyi sbornik. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1954. 110 p. Supplement: [Album of the principal circuits] Al'bom printsipial'nykh skhem. 1 v. (unpaged, diagrs.)

1. Russia (1923- U.S.S.R.) Ministerstvo svyazi. Tekhnicheskoye upravleniye.
(Telegraph—Aparatus and supplies)

KOSTANYANTS, B.A., inzhener

New telephone apparatus. Vest.sviazi 15 no.9:9-10 S '55. (MIRA 8:12)

1. Glavnyy konstruktor zavoda VEF
(Telephone--Apparatus and supplies)

KOSTARCHUK, V. N.

Dissertation: "An Investigation of Several Iterative Processes." Cand Phys-Math Sci, Zhitomir State Pedagogical Inst, Zhitomir-Krivoy Rog, 1953. (Referativnyy Zhurnal--Matematika, Moscow, Aug 54)

SO: SUM 393, 28 Feb 1955

KOSTARCHUK, V.N.

USSR/ Mathematics - Linear Equations

Card 1/1 : Pub. 22 - 5/49

Authors : Kostarchuk, V. N.

Title : About a method of solution of a system of linear equations and about the finding of eigen vectors of a matrix

Periodical : Dok. AN SSSR 98/4, 531-534, Oct. 1, 1954

Abstract : The iteration method for the solution of systems of linear algebraic equations with positively-defined matrices is described. The method also permits eigen vector, corresponding to the maximum eigen numbers of the matrices, to be found. One reference (1948).

Institution : ...

Presented by : Academician M. A. Lavren'tiev, June 25,1954

KOSTARCHUK, V.N.

16.4600

32509
S/044/61/000/011/032/049
C111/C444

AUTHOR: Kostarchuk, V. N.

TITLE: The method of normal secants for the solution of linear operator equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 11, 1961, 78, abstract 11B410. (Tr. Seminara po funkts. analizu. Rostovsk.-d/D. un-t, Voronezhsk. un-t. 1960, vyp. 3-4, 54-76)

TEXT: The method of normal secants formerly proposed by the author (RZh Mat, 1955, 4709) is used in order to solve the equation $Ax = a$ in the Hilbert space as well as to determine the least upper bound M of the spectrum of the positive operator A. The process is constructed for arbitrary x_0 according to the formulas

$$x_{n+1} = x_n - 2c_n \Delta_n, \quad \Delta_{n+1} = \Delta_n - 2c_n A\Delta_n, \quad c_n = (\Delta_n, \Delta_n)(A\Delta_n, \Delta_n)^{-1}$$

where $\Delta_n = Ax_n - a$. If A is compact and $a \in D(A^{-2})$, then generally holds $\Delta_n \to \Delta$, where $A_\Delta = M\Delta$, $c_n \to M^{-1}$ and $(x_{n+1} + x_n) \to 2A^{-1}a$. If A is positive definite and obtained from a compact operator by a

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S/044/61/000/011/032/049
C111/C444

The method of normal secants for the ...

translation, then the above statement holds too. Besides an asymptotic estimation of the convergence speed is given. Further on for a positive definite bounded operator it holds $(x_{n+1} + x_n) \to 2A^{-1}a$. Some generalisations of the process of normal secants are considered and their convergence is proved. There are notes on the application of this method on the solution of integral and differential equations.

[Abstracter's note: Complete translation.]

Card 2/2

KOSTARCHUK, Viktor Nikolayevich[Kostarchuk, V.M.]; KHATSET, Boris Isaakovich; KOPERSAK, G.D.[Kopersak, H.D.], red.; VOLKOVA, N.K., tekhn. red.

[What is possible and what is not possible in geometry using compass and ruler]Pro moshlyve i nemozhlyve v geometrii tsyrkulia i liniiky. Kyiv, Radians'ka shkola, 1962. 124 p. (MIRA 16:1)

(Geometry)

KOSTAREV, A.A.

Use of the phase shift method in the inverse scattering problem. Izv. vys. ucheb. zav.; fiz. no.4:109-112 '64 (MIRA 17:8)

1. Odesskiy inzhenerno-stroitel'nyy institut.

KOSTAREV, A.A.

Theory of perturbations in the inverse scattering problem.
Izv. vys. ucheb. zav.; fiz. 8 no.1:125-128 '65. (MIRA 18:3)

1. Odesskiy inzhenerno-stroitel'nyy institut.

Theory of the absorption of x-rays by metals. A. I. Kostarev. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 9, 377-79(1939).—The coeffs. of absorption, and the course of the general absorption and the fine-structure curves by Sommerfeld and Brillouin electrons in the K-shells of metals are calcd. Neither of these methods, nor a modified Kronig fine-structure method gives satisfactory results. K. believes that the fine structure is conditioned by a distortion of the wave function of the removed electron by the neighboring atoms of the metal lattice.

F. H. Rathmann

PROCESSES AND PROPERTIES INDEX

C A

3

Theory of the fine structure of the x-ray absorption bands of a solid body. A. I. Kostarev. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 11, 60-73(1941).—Assuming that the fine structure of the x-ray absorption of solid bodies is due to scattering of the waves of the x-ray electrons of the absorbing atom by the surrounding atoms, and applying the method used by Peterson in his molecular x-ray absorption, K. calcs. the fine-structure of polycryst. Cu. The calcd. values are in better agreement with the exptl. data of Rupp (*C. A.* 23, 3402) than are the values calcd. by Kronig and by Bethe (*C. A.* 25, 4783; 26, 4247).

F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KOSTARGV, A. I.

Chair of Physics, City of Gorkiy Teachers' Training Inst., (-1946-)

"On Computation of Fine Structures of X-Ray Absorption Spectra of Polyatomic Gases $GeCl_4$ and $AsCl_3$,"

Zhur. Fiz. Khim., No. 1, 1946.

4

3

Possibility of existence of an anisotropy of fine structure in x-ray absorption spectra in crystals. A. I. Kostarev (Pedagog. Inst., Gor'kii). *J. Expt. Theoret. Phys.* (U.S.S.R.) **10**, 739–43(1940).—R. L. Kronig's theory of fine structure of the short-wave end of absorption bands of x-rays (*C.A.* **23**, 4783; **28**, 4217), observed in polycrystals, is tentatively extended to single crystals and shown to lead of necessity to the existence of an anisotropy effect which is incompatible with exptl. findings. From the point of view of the author's alternative theory, linking fine structure in absorption to an effect of the closest neighbors of the absorbing atom, and resulting in spherical symmetry, anisotropy in single crystals is impossible.

Kronig's theory is considered to be limited to the long-wave side of x-ray absorption bands in crystals.

N. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

3

Explanation of the fine structure of x-ray absorption spectra of solids. A. I. Kostarev (Superior Inst. Navigation, Odessa). *Zhur. Eksper. Teoret. Fiz.* 19, 413-20 (1949); *Chem. Zentr.* 1950, I, 830.—The fine structure of the lines of the x-ray absorption spectra of solids are characterized not by the location of their max. and min. alone but also by their form and relative intensity. The results of x-ray absorption measurements are explained in terms of the theory of the fine structure of x-ray absorption. The superfine structures for Cu and α-Fe are calcd. The influence of the type of crystal lattice on the character of the fine structure is described. M. G. Moore

KOSTAREV, A. I.

168T99

USSR/Physics - X-Ray Spectrum, Absorption Fine Structure, X-Rays

Sep 50

"The Theory of Temperature Dependence in the Fine Structure of X-Ray Absorption Spectra of Solids," A. I. Kostarev, Odessa State U

"Zhur Eksper i Teoret Fiz" Vol XX, No 9, pp 811-823

Considers influence of thermal oscillations in surrounding atoms on elementary act of K X-ray absorption in a solid. Hence, develops subject theory. Precalculates temperature boundaries of disappearance of fine and superfine structures, particularly for crystallic copper. Theoretical conclusions agree well with facts. Submitted 11 Mar 50.

168T99

KOSTAREV, A.I.

9

√The temperature limits for the disappearance of the fine and hyperfine structure of the X-ray absorption spectra of various elements A. I. Kostarev (State Univ. of [illegible]). *Zhur. Eksper. i Teor. Fiz.* 21, [illegible] (1951). 2502b.—The theory of the temp. dep. [illegible] of the fine structure of the x-ray absorption spectra [illegible] the theoretical evaluation of the temp. limits [illegible] elements: Ca, Ni, Zn, Hg, Pt, and Pb. The appearance and disappearance of this effect is studied. The theory, which is only semiquant., leads to good agreement with exptl. results. J. Roetar Leach.

KOSTAREV, A.I.

USSR/Physics - Spectrography, Crystals May 52

"Theory of Absorption and Emission X-ray Spectra of Ionic Crystals," A. I. Kostarev, Odessa State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 5, pp 628-635

Comparison of fine structure of K-bands of X-ray absorption of ionic crystal (e.g., KCl) with the system of its optical levels reveals a rather coincidence. Same comparison with K-series of X-ray emission spectrum allows one to interpret the short-wave satellites of this spectrum. Received 12 Sep 51.

215T97

1. KOSTAREV, A. I.

2. USSR (600)

4. Absorption Spectra

7. Comment on the articles of A. I. Kostarev. Zhur. eksp. i teor. fiz. 23 no.5. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KOSTREV, A.I.

(Andrey Ivanovich)

"Investigation of the Theory of X-ray Absorption Spectra," (Dissertation), Academic degree of Doctor in Physicomathematical Sciences, based on his defense, 24 December 1953, in the Council of the Kiev State U im. Shevchenko, and Academic title of Professor, Chair, Gneral Physics.

[redacted]M- 3,054,778, 2 Oct 57

Odessa Electrical Engineering Inst. of Communications.

KOSTAREV, A.I. (g. Novorossiysk)

The Maikop combine uses antiquated technology. Der. i lesokh m. prom. 3 no.12:26 D '54. (MLRA 8:1)

(Maikop--Furniture industry)

USSR/Physics - X-ray spectra FD-1373

Card 1/1 : Pub. 146-18/18

Author : Kostarev, A. I., and Borovskiy, I. B.

Title : Discussion. Theory of Roentgen absorption spectra

Periodical : Zhur. eksp. i teor. fiz., 26, 377-384, May 1954

Abstract : The authors discuss the theory of the fine structure of Roentgen absorption spectra of various substances. They give a survey of the literature on this theory, especially of the works of E. Ye. Vaynshteyn, R. L. Barinskiy, and K. I. Narbutt, writing in Doklady Akademii Nauk SSSR for 1951-1952. In particular the two authors consider the applicability of the Rydberg series formula, the relation between theories of the main edge and the peak of the Roentgen absorption band, and finally the Roentgen spectra of ionic crystals. Thirty-two references, 19 USSR.

Institution : Odessa State University and Institute of Metallurgy, Acad. Sci. USSR

Submitted : August 19, 1953

KOSTAREV, A.I.

Theory of the anisotropy of X-ray K-absorption spectra in single crystals. Fiz. met. i metalloved. 19 no.6:801-808 Je '65. (MIRA 18:7)

1. Odesskiy elektrotekhnicheskiy institut svyazi.

L 4180-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/GG
ACCESSION NR: AP5016521 UR/0126/65/019/006/0801/0808
548.7.01

30
27
B

AUTHOR: Kostarev, A. I. 44,55

TITLE: Theory of anisotropy of x-ray absorption *K*-spectra of single crystals

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 801-808 15

TOPIC TAGS: x ray absorption spectrum, single crystal, spectral fine structure

ABSTRACT: A theory is presented which explains the relationship between the fine structure of x-ray *K*-spectra absorption of single crystals and the orientation and polarization of the x-ray being absorbed. Two cases were compared: (1) when the absorbed (unpolarized) x-ray is parallel to the *c*-axis of the single crystal, and (2) when the ray is directed at some angle to this axis. After discussing the relative ceofficient of x-ray *K*-absorption, the perturbation of the wave of the x-ray electron by the atomic surroundings of the absorbing atom, and the influence of the scattering of the x-ray electron on the matrix element of its $K \rightarrow F$ absorption transition, the author calculates the relative coefficient of x-ray *K*-absorption of a single crystal, allowing for the polarization of the radiation.

Card 1/2

L 4180-66
ACCESSION NR: AP5016521

From the expression for this coefficient, he draws several conclusions regarding the anisotropy of the fine structure of x-ray absorption. Orig. art. has: 2 figures, 40 formulas.

ASSOCIATION: Odesskiy elektrotekhnicheskiy institut svyazi (Odessa Electrical Engineering and Communications Institute)

44,55

SUBMITTED: 07Jul64 ENCL: 00 SUB CODE: OP, SS

NO REF SOV: 005 OTHER: 007

Card 2/2 hd

L 12872-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG/LHB

ACC NR: AP5018854 SOURCE CODE: UR/0126/65/020/001/0026/0032

AUTHOR: Kostarev, A. I.

59
B

ORG: Odessa Electrotechnical Institute of Communications (Odesskiy elektrotekhnicheskiy institut svyazi)

TITLE: Anisotropy of the fine structure of x ray K absorption spectrum of a gallium single crystal

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 1, 1965, 26-32

TOPIC TAGS: gallium, crystal anisotropy, spectral fine structure, x ray absorption spectrum, single crystal

ABSTRACT: A theory on the anisotropy of x-ray absorption of single crystals (previously formulated by the author) is applied to experimental data of W. M. Weber (*Physica*, 1962, 28, 689; 1964, 30, 2219) on this phenomenon in gallium single crystals. Fig. 1 shows x-ray absorption of the K band in Ga single crystals. X-ray patterns for the fine structure of K band absorption for Ga single crystals show a variation in the extrema in two crystallographic orientations. In the case of k' beam polarization, the intensity of the fine structure is minimal where

UDC: 548.7.01

Card 1/2

L 12872-66

ACC NR: AP5018854

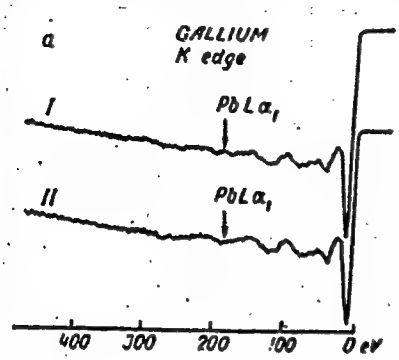


Fig. 1. I--k' beam with the axis of the crystal at angles $\theta_0 = 52°$ and $\phi_0 = 82°$; II--K beams parallel to the axis C_0 (z axis)

the plane of oscillation of this beam coincides with the plane of (C_0'k'). The theory was found to be in satisfactory agreement with Weber's experimental findings. Orig. art. has: 3 figures, 4 tables, 19 formulas.

SUB CODE: 20/ SUBM DATE: 07Jul64/ ORIG REF: 001/ OTH REF: 003

Card 2/2 HW

SHIROKOV, A.P., kand.tekhn.nauk; KOSTAREV, A.P., inzh.; KOTYAKHOV, V.I., inzh.

Use of coal saws in Kuznetsk Basin mines. Bezop.truda v prom. 7 no.3:71-72 Mr '63. (MIRA 16:3)

1. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Shirokov). 2. Kombinat ugol'nykh predpriyatiy Kuznetskogo kamennougol'nogo basseyna (for Kostarev). 3. Shakhta im. Vakhrusheva, Kuzbass (for Kotyakhov).
(Kuznetsk Basin--Coal mining machinery)

KOSTAREV, A.P.

[redacted]

Incidence of pyoderma and minor skin injuries in workers of machine-tractor stations and state farms located in reclamation zones of virgin and idle lands. Vest.ven. i derm. no.3: 22-23 My-Je '55. (MLRA 8:10)

1. Iz Troitskogo gorodskogo vendispansera Chelyabinskoy oblasti (glavnyy vrach A.P.Kostarev)

(PYODERMA, epidemiology
in Russia, on motor tractor stations & state farms)
(SKIN, wounds and injuries
incidence on motor tractor stations & state farms in Russia)
(AGRICULTURE
pyoderma & skin inj.incidence in Russia)
(OCCUPATIONAL DISEASES
pyoderma & skin inj. in workers of motor tractor stations & state farms in Russia)
WOUNDS AND INJURIES
skin in workers of motor tractor stations & state farms in Russia)

KOSTAREV, A. P.

ZAYTSEV, B.M.; ADAMOVICH, Ye.A.; CHUMADUROV, A.T.; KOSTAREV, A.P.; IPATOV, M.I.

Preventing scum formation in evaporators. Gidroliz. i lesokhim. prom. 8 no.4:13-14 '55. (MLRA 8:9)

1. Vsesoyuznyy Nauchno-issledovatel'skiy institut gidrolisnoy i sul'fitno-spirtovoy promyshlennosti. (Evaporating appliances)

KOSTAREV, A.P.

Virile hypertrichosis. Vest.ven. i derm. 30 no.5:54 S-O '56.
(HYPERTRICHOSIS) (MIRA 9:12)

KOSTAREV, A.P.

Organization of the struggle against purulent skin diseases in agriculture. Vest.derm. i ven. 32 no.1:34-37 Ja-F '58. (MIRA 11:4)

1. Iz Troitskogo kozhno-venerologicheskogo dispansera Chelyabinskoy oblasti (glavnyy vrach A.P.Kostarev)
(OCCUPATIONAL DISEASES, prev. & control
purulent skin dis. in agriculture, organiz. of prev. (Rus)
(SKIN DISEASES, prev. & control, same)

USSR / Farm Animals. The Honeybee. Q

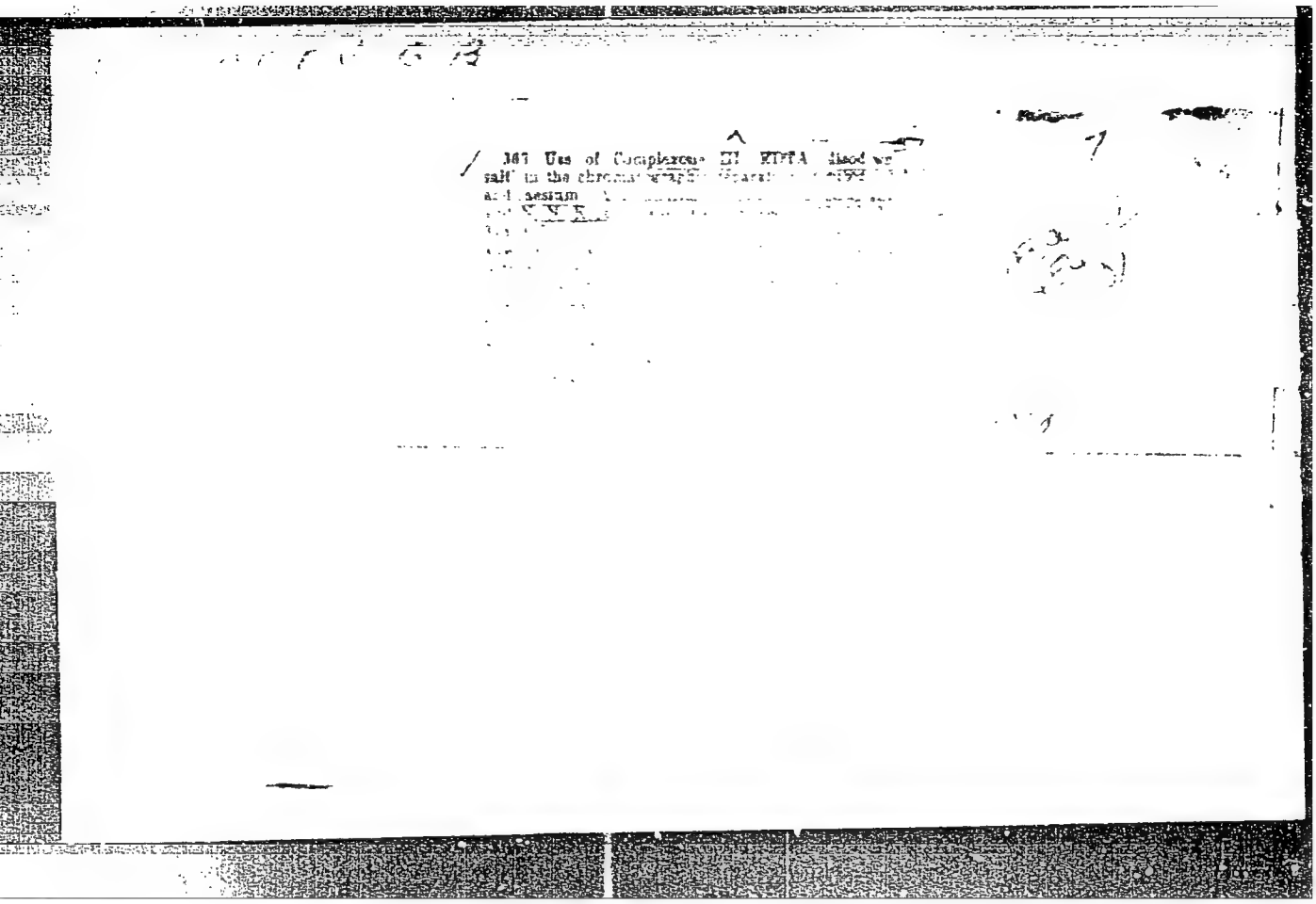
Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7404

Author : Kostarev, G.
Inst : Bashkir Experimental Station of Apiculture
Title : The Influence of Setting Queens into the Upper Frames of the Hive upon the Swarming of Bees and the Collection of Honey

Orig Pub : S. kh. Bashkirii, 1957, No 4, 32-35

Abstract : In experiments at the Bashkirskaya Experimental Station of Apiculture which were carried out on 20 bee colonies, it was established that as bees were kept in two frames under the conditions of collecting honey from linden trees, the setting of queens with young bees and a sealed-off brood into the upper

Card 1/2



BUKIREV, A.I.; KOSTAREV, G.F.

Age and growth of bream in Kama Reservoir. Vop. ikht. no.17:68-74 '61. (MIRA 14:5)

1. Permskiy gosudarstvennyy universitet.
(Kama Reservoir--Bream)

CHERNOUSOV, Ya.M., prof.; KOSTAREV, I.I., starshiy prepodavatel'

Structure of the Bulanash-Yelkina coal region. Izv. vys. ucheb. zav.; gor. zhur. 5 no.1:3-7 '62. (MIRA 15:4)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy geologii mestorozhdeniy goryuchikh poleznykh iskopayemykh Sverdlovskogo gornogo instituta.
(Bulanash-Yelkina region--Coal geology)

KOSTAREV, I.I., inzh.

Regularities in the distribution of coal types in the Bulanash-Yelkina coal region. Izv. vys. ucheb. zav.; gor. zhur. 6 no.3: 3-12 '63. (MIRA 16:10)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy mestorozhdeniy goryuchikh iskopayemykh.

KOZYAREV, L. N.; KUVAYEVA, A. S.; Engs.

Electric Cables

Locating cable damage, Prom. energ. 10, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Unclassified.

KOSTAREV, L. S., Docent (Cand Agric. Sci.)

"A Method of Operational Planning on Grain Collective Farms," Sub. 6 Feb 47, Moscow Inst of Engineers for the Organization of Land Exploitation.

Dissertations presented for degrees in science and engineering in Moscow in 1947.

SO: Sum.No.457, 18 Apr 55

KOSTAREV, N.N.; VOL'PE, L., red.

[Machine tools. Section "Gear-cutting machines;" written lectures] Metallorezhushchie stanki. Razdel: "Zuborezhnye stanki;" pis'mennye lektsii. Leningrad, Severo-zapadnyi zaochnyi politekhn. in-t, 1964. 103 p. (MIRA 18:7)

KOSTAREV, S.S., kapitan 3-go ranga.

How we pass on experience to young officers. Mor. sbor. 47 no.12:46-49 D '63. (MIRA 18:12)

DEMEN, V.V., gornyy tekhnik; KOSTAREV, S.S., gornyy tekhnik

Payment to workers of integrated brigades. Gor. zhur. no.4:14-15 Ap '65. (MIRA 18:5)

1. Rudnik "Kholtoson", g. Zakamensk, Buryatskaya ASSR.

KOSTAREV, V., kand.tekhn.nauk

Clouds on the radar screen. IUn.tekh. 6 no.12:44-48 D '61. (MIRA 14:12)

(Radar metereology)

KOSTAREV, V. N.

"Investigation of the Antifriction Properties of Metalloceramic Bearings." Cand Tech Sci, Leningrad Polytechnic Inst, Leningrad, 1954. (Stanki i Instrument, No 11, 1954)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

KOSTAREV, V.N.

Stand testing of PM-350 reducing gears. Trudy LPI no.219:130-139 '62. (MIRA 15:12)
(Gearing—Testing)

KOSTAREV, V.N.

Testing machine for sliding bearings. Trudy LPI no.219:153-161 '62. (MIRA 15:12)

(Bearings (Machinery)—Testing)

ANOSOV, A.S.[deceased]; BARBASH, I.D.; KOMKOV, V.N.; KOSTAREV, V.N.; KUGUSHEVA, V.M.; POLYAKOV, V.S., prof., red.

[Laboratory manual for a course on machine parts] Uchebnoe posobie k laboratornym rabotam po kursu detalei mashin. 2. izd. dop. i perer. [By A.S.Anosov i dr. Leningrad, Leningr. politekhn. in-t im. M.I.Kalinina, 1964. 55 p. (MIRA 18:4)

KOSTAREV, V. PA 190T97

USSR/Radio - DOSAAM Clubs Jun 51

"The Center of Radio Amateur Work in Zlatoust," V. Kostarev

"Radio" No 6, p 11

Tells of the work of one Dement'yev, metal cutter of the plant imeni Lenin, in organizing the radio club in Zlatoust. Club director is V. P. Petrov, a former officer of the Soviet Army. He believes that amateurs of Zlatoust will shortly be able to build their own small television center.

190T97

KOSTAREV, V.V.

Operation of twisting-machine travelers. Trudy LPI no.191:267-277 '57.

(Textile machinery) (MIRA 11:9)

KOSTAREV, V. V.

"The Aerostatic Resistance Thermometer," No 2, pp 83-86.
(Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

KOSTAREV, V.V.

KHAKHALIN, Viktor Stepanovich, kandidat tekhnicheskikh nauk; KOSTAREV, V.V., otvetstvennyy redaktor; VLASOVA, Yu.V., redaktor; BRAYNINA, N.I., tekhnicheskiy redaktor

[Radio engineering in aerology] Radiotekhnika v aerologii. Leningrad, Gidrometeor.izd-vo, 1957. 263 p. (MLRA 10:7)
(Radiosondes) (Radar meteorology)

AUTHORS: Gorelik, A. G., Kostarev, V. V., Chernikov, A. A. 50-58-5-2/20

TITLE: Radar Measurement of Turbulence in Clouds (Radiolokatsionnoye izmereniye turbulentnykh dvizheniy v oblakakh)

PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 5, pp 12-19 (USSR)

ABSTRACT: In recent years the possibility of a further perfection of the method and an extension of program of the meteorological observations by means of these methods of operation already introduced arose. This development is possible in 3 directions complementing each other: 1) Modernization of the usual apparatus according to the objects and the requirements of the meteorologists. 2) Elaboration of a special aerological apparatus. 3) Determination of data on reflection-sources of signals of a meteorological origin. The above-mentioned methods in a certain sense are inertia-like. The increase in this property can considerably increase the domain of employment of these methods in aerology. At the same time it is beyond that the inertia-less method, i. e., the observations of every impulse separately, can give valuable

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additional information on the physical properties of meteorological phenomena. Observations according to the last method are described. The measurement mentioned in the title is explained by figure 1. At the output of the receiver a sequence of impulses of the radio-echo (Figure 1 v) forms. For the determination of the connections between the fluctuation amplitudes of the sequence of reflected signals and the mean square velocity of the chaotic motions of dispersing particles the authors employ a theory which was worked out during the investigation of the statistical nature of the ionosphere (References 1,2). A measuring method of the velocity of the radio signal expressed in formulae (1) - (15) is considered inconvenient by the authors. The estimation of the velocity with regard to orientation is expressed by the formula:

$$v_s = \frac{n\lambda}{2\Delta T} \quad (17)$$

The counting of the distinctly marked maxima during the time of observation and the multiplication with a con-

stant coefficient $\frac{\lambda}{2\Delta T}$ is sufficient. A block scheme of the measuring device is shown by figure 2. Figure 3 gives recordings of the pulse-sequence. The pulses followed each other at 1/1500 seconds distance. The demands made on the apparatus mainly require that the frequency of the magnetron during the observation may change by a amount which is much smaller than $\frac{1}{0}$, that means:

$\Delta f \ll \frac{1}{\tau}$. By the investigation of the fluctuation of the signal which is reflected by 2 weakly fluctuating local objects the frequency drop can be estimated. By the above-mentioned method the chaotic motions of the diffusers in different types of clouds and precipitation were investigated in summer and fall 1957. The distribution of the amplitudes of the received signal well agrees with the theoretical data. The not yet numerous results obtained from the work permit some conclusions on the amount

of chaotic agitations in the clouds. The values of v_o for a vertical column of 15o m brought to an average, lie between 0,1 and 2,0 seconds. The highest values were obtained for thunder-clouds, the lowest ones for the stratus clouds. The method proved to be usable for this purpose.
There are 4 figures and 2 references, 2 of which are Soviet.

1. Clouds--Turbulence 2. Turbulence--Measurement
3. Radar--Performance 4. Meteorology

SOV/58-59-8-18667

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 234 (USSR)

AUTHOR: Kostarev, V.V.

TITLE: An Experiment in Sounding the Troposphere by Means of Radar

PERIODICAL: Tr. Tsentr. aerol. obser., 1958, Nr 20, pp 3-16

ABSTRACT: The article describes equipment developed in 1956 for the purpose of sounding the troposphere by means of radar. The equipment is based on a modernized version of the "Kobal't" radiolocator with stepped-up pulse power. As the reflector for the antenna unit a reinforced concrete bowl with a diameter of 20 m is used, which ensures the vertical sounding of the troposphere. The high-frequency unit of the station with the emitter is suspended by means of metallic cables at the focal point of the reflector. The required form of reflector surface was obtained with the aid of a special gage whose blades cut off the cement mortar coating the concrete surface. The concrete surface was metallized with zinc by means of the Schoope process. The photographic results of observation were registered on a cathode-ray tube operating by radial scanning without after-glow, which ensured a photographic

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SOV/58-59-8-18667

An Experiment in Sounding the Troposphere by Means of Radar

record of the rapid fluctuations in brightness. The installation of immobile radial scanning vertically ensures a graphic space-time cross section of the troposphere. The rate of movement of the film depends on the particular observational problem: in order to obtain a picture of clouds which approximates the visual image, the rate of movement must be coordinated with the velocity of the wind. Satisfactory results were obtained at a velocity of 0.2 - 0.3 cm/min. The division of the regions giving rise to the signals of radioechoes of different intensity was effected by means of a stepped ARU automatic regulating control in time. A reflector with a large diameter gives an advantage in detecting clouds of the upper stratum, but at the same time it impairs the detection of clouds of the lower stratum. For good observations on all levels of the troposphere it is necessary to use several emitters with different irradiation characteristics. The results of the troposphere sounding of Spring 1956 are cited. Precipitates of all intensities were detected during their liquid and solid phases, as well as clouds in which inversion strata evolved under favorable conditions. The greatest registered height of the clouds was 12.5 km. In connection with the unexpectedly frequent detection of sharpened radioechoes, received during the complete absence of clouds and precipitates, a theory has been advanced concerning the radar

Card 2/3

GORELIK, A.G.; KOSTAREV, V.V.

Modulation method of increasing the sensitivity of the receiver of a radar aerological observation station. Trudy TSAO no.20: 36-45 '58. (MIRA 12:1)

(Radar meteorology)

SOV/120-59-1-19/50

AUTHORS: Gorelik, A. G., Kostarev, V. V.

TITLE: Modulation Method of Separating the Weak Pulse Signals (Modulyatsionnyy metod vydeleniya slabykh impul'snykh signalov)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 77-82 (USSR)

ABSTRACT: The authors designed a special storage circuit which permits the improvement in the signal-to-noise ratio at the output of a microwave radar receiver. The principle of operation of the storage device (Ref 4) is based on the comparison of the average values of two signals of equal duration. The signals are taken from the output of the receiver and are in the form of "segments". The first segment is taken during the interval following the transmission of the sounding pulse and corresponds to a distance of 0-20 km. The second segment corresponds to distances of 80 to 100 km. The storage device (see the block diagram of Fig 1) is synchronized or triggered by the same pulse which triggers the time base of the radar equipment. The pulse is applied to the first phantastron circuit of the device (see the detailed circuit diagram in Fig 2).

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SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

The delay of the phantastron can be varied continuously from 15-80μs. The phantastron pulses are differentiated and their trailing edges are used to trigger the second phantastron which has a fixed delay; the duration of this delay is equal to half the repetition period of the radar pulses. The trailing edges of the pulses from the second phantastron are used to trigger the blocking oscillator which controls an electronic switch. The signal from the output of the video-amplifier of the radar equipment is applied to the electronic switch. However, the signal is accepted by the integrator which follows the switch only at the instants of the appearance of the control voltage at the switch. The signal at the output of the switch is integrated (the averaging process) and is then applied to a second switch which is controlled by the same pulses as the first switch, except that these are delayed in time by 5μs. The second switch is terminated by a load capacitance which is charged to the full amplitude during the opening of the switch; this voltage is preserved on the capacitor until the succeeding operation of the switch, when it assumes a new value which is equal to the integrated value of the succeeding "segment". The voltage from the second switch is applied to a narrow band amplifier and then to a synchronous detector.

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SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

If a useful signal exists in the first segments, the output voltage of the second switch contains a component having the frequency of the transmitted pulses. If this component is absent, no useful signal is present. In order to secure an averaging time of the order of 1 sec, it is necessary to employ a very narrow band amplifier; this can be done by using a synchronous filter (employing a heterodyne). The circuit of Fig 2 has the averaging time, ranging from 1.2 to 2.5 sec. In practical applications it was found that when the averaging time is 2.5 sec, the gain in the signal-to-noise ratio in comparison with that of a standard radar station was 17 db. The improvement secured by using the storage device is illustrated in Figs 4, where the lower photograph shows the normal signal,

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SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

while the upper one illustrates the output produced by the storage equipment. The paper contains 5 references, 4 of which are Soviet and 1 is English.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory)

SUBMITTED: February 7, 1958.

Card 4/4

3(6), 9(9)

AUTHORS: Gorelik, A. G., Kostarev, V. V. SOV/20-125-1-14/67

TITLE: The Radio Echo of Some Invisible Objects of Troposphere (Radioekho nekotorykh nevidimykh ob"yektov troposfery)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 59-61 (USSR)

ABSTRACT: The dielectric inhomogeneities of the atmosphere caused by the gradients of meteorological elements may call forth radar signals. However, neither the nature nor the structure of the sources of such a radio echo are yet known. Some data might be obtained by investigating the characteristics of the signals and by comparing them with meteorological conditions. For this purpose, a regular radar sounding of the troposphere was carried out on the wavelength 3.2 cm at the Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory) from 1956 to 1958. In the course of observations several times punctiform sources of a radio echo were detected at altitudes up to 7 km. At the same time, no visible objects were detected in the atmosphere from the ground and by means of an aerostat. Sounding results were recorded by two different methods. The vertical distribution of the reflecting objects was recorded

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by two different methods. The vertical distribution of the reflecting objects was recorded according to the inertia method, whereas the succession of the individual pulses of radio echo was recorded in order to determine the peculiarities of the reflected signals. The essential characteristic feature of radio echo is the degree of reflection of the signal, which is determined from the depth and from the character of the envelope of the sequence of reflected signals. If an individual signal A is originated by superimposition of a regularly reflected and a disordered signal, it may be represented in the form $A = A_0 \cos\omega_0 t + \sum_1^N a_s \cos(\omega_s t - \varphi_s)$. A_0 denotes the amplitude of the regular signal, ω_0 the frequency of the sounding pulse, $\sum_1^N a_s \cos(\omega_s t - \varphi_s)$ the absolute value of the signal of the inhomogeneities moving in a disordered manner. $A_0^2 / \sum_1^N a_s^2 = \beta^2$ is the ratio of the mirror component and of the disordered component of the signal. The degree of signal reflection and the root mean square velocity of the

and heating of the ground. 2) There is an annual and a daily periodicity. The signals are observed in the warm season, and the number of signals attains a maximum between 13 - 15 hours. There is usually a layer of inversion over the region where radio echo sources frequently occur. 4) The life period of the signals of an individual source decreases with rising wind velocity. The signal intensity also weakly depends on the duration of the sounding pulse of the transmitter. The variety of the properties of the signal is probably caused by the variety of its internal structure. Radar sounding allows the evaluation of the gradient of the dielectric constant, the

determination of the spatial distribution of inhomogeneities in the troposphere, their evolution with progressing time, their concentration, etc. There are 2 figures and 5 references, 2 of which are Soviet.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological Laboratory)

PRESENTED: November 24, 1958, by M. A. Leontovich, Academician

SUBMITTED: October 28, 1958

SHUPYATSKIY, Arkadiy Borisovich; KOSTAREV, V.V., red.; SOROKINA, M.I., red.; ZEMTSOVA, T.Ye., tekhn.red.

[Radar measurement of the intensity and some other characteristics of precipitation] Radiolokatsionnoe izmerenie intensivnosti i nekotorykh drugikh kharakteristik osadkov. Pod red. V.V.Kostareva. Moskva, Gidrometeor.izd-vo, 1960. 118 p. (MIRA 14:1)

(Precipitation (Meteorology)) (Radar meteorology)

PHASE I BOOK EXPLOITATION SOV/5852

Borovikov, Aleksandr Moiseyevich, Ivan Ivanovich Gayvoronskiy, Yelizaveta Germanovna Zak, Vadim Vladimirovich Kostarev, Il' ya Pavlovich Mazin, Vladislav Yevgen' yevich Minervin, Aleksandr Khristoforovich Khrgian, and Solomon Moiseyevich Shmeter

Fizika oblakov (Cloud Physics) Leningrad, Gidrometeoizdat, 1961. 458 p. 5000 copies printed.

Ed. (Title page): A. Kh. Khrgian; Ed. : V. S. Protopopov; Tech. Ed. : M. I. Braynina and O. G. Vladimirov.

PURPOSE: This book is intended for meteorologists and for specialists in forecasting service and aviation.

COVERAGE: The book describes modern methods of studying the development, structure and origin of clouds. Special attention has been given to the forma-

Card 1/~~10~~ 2

42524

S/789/61/000/036/002/013
E032/E314

3.5800

AUTHORS: Borovikov, A.M., Kostarev, V.V., Mazin, I.P. and Chernikov, A.A.

TITLE: Relation between the magnitude of the radar signal reflected from a cloud and the cloud parameters

SOURCE: Tsentral'naya aerologicheskaya observatoriya. Trudy. no. 36. Moscow, 1961. Voprosy fiziki radiolokatsii oblakov, 14 - 30

TEXT: Atlas (Journ. of Met. v.11, no.4, 1954) and Donaldson (Journ. of Met., v.12, no. 3, 1955) have discussed the possibility of the measurement of the liquid-water content of clouds by radar methods and have concluded that this was possible. In view of the considerable scientific and practical importance of the problem, the authors undertook a theoretical and experimental study of this subject and the results are now reported. Theoretical analysis showed that the strength of the reflected radar signal provided information about the quantity

$$Z = \int_0^\infty n(r)\, r^6\, dr \qquad (4) .$$

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Since the liquid-water content is given by

$$w = \frac{4}{3} \pi \int_0^\infty n(r)\, r^3\, dr \qquad (5),$$

it follows that the relation between Z and w depends on the form of the particle-size distribution. Detailed examination of known drop-size distributions shows that w can be determined provided there are not too many large particles. The experimental part was carried out from the aerological radar station developed and built at TsAO and operating at $\lambda = 3.2$ cm. The aim was to obtain radar data which could be compared directly with aeroplane observations. A description of the apparatus is said to be available elsewhere [Abstracter's note: reference not given]. A detailed numerical table is reproduced showing a comparison between radar observations and observations carried out from an aeroplane with the aid of the drop-size meter developed by Nevzorov at TsAO (c.f.* pp. 3-13 of this issue). General conclusions: strong signals ($Z > 10^{-15}$ cm^3) are due to large particles

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E032/E314

so that practically all the characteristics obtained with the radar equipment refer only to the large-particle "cloud". Since the presence of even a small number of such particles in clouds has an appreciable effect on the reflected signal, and since the strength of the signal is very sensitive to the size spectrum, it is considered that the relation between Z and w cannot, in practice, be separated from the general background due to other factors, i.e. w cannot be determined from Z alone. Thus, the "optimistic conclusions" of Atlas and Donaldson are considered unfounded. It is noted, however, that this does not mean that radar methods cannot be used in cloud studies. On the contrary, because the radar signal provides information about the presence and behaviour of large particles in clouds, this opens up new possibilities in the experimental study of clouds and precipitation.
There are 2 figures and 4 tables.

39137
S/058/62/000/006/117/136
A062/A101

3,5800

AUTHOR: Kostarev, V. V.

TITLE: Radar measuring of cloud water abundance

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 32, abstract 6Zh214 ("Tr. Tsentr. aerol. observ.", 1961, no. 36, 31 - 36)

TEXT: The possibilities of measuring cloud water abundance by radar methods are discussed. It is shown that the process based on radar reflection yields almost always erroneous results in view of the presence of "gross" particles in almost all clouds. The process based on measuring water abundance by the attenuation is practically also inconsistent since the spectrum variations of the cloud particle dimensions act considerably more on the signal amplitude than on the attenuation. The latter statement also applies to measuring water abundance by the difference of attenuation on different wavelengths. A method is proposed for distant determining water abundance by the magnitude of the attenuation of a signal reflected from a standard target (a sphere). It is shown that the proposed method of determining water abundance has a number of advan-

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Radar measuring of cloud water abundance

S/058/62/000/006/117/136
A062/A101

tages (no need of high potential radar signals, no need of absolute measuring of the power of the radio echo, etc.).

Yu. Mel'nikov

[Abstracter's note: Complete translation]

Card 2/2

BOROVIKOV, A.M.; KOSTAREV, V.V.; MAZIN, I.P.

Use of radar for studying the structure of clouds. Dokl. AN SSSR 140 no.3:575-578 S '61. (MIRA 14:9)

1. TSentral'naya aerologicheskaya observatoriya. Predstavleno akademikom Ye.K.Fedorovym. (Radar meteorology)

GORELIK, A.G.; KOSTAREV, V.V.; CHERNIKOV, A.A.

New possibilities for wind measurement by radar. Meteor. i gidrol. no.7:34-39 Jl '62. (MIRA 15:6)
(Radar meteorology) (Winds)

3

Kostarev, V.V.

AID Nr. 981-3 3 June

CONFERENCE AT CENTRAL AEROLOGICAL OBSERVATORY (USSR)

Meteorologiya i gidrologiya, no. 3, 1963, 60. S/050/63/000/004/002/002

The following are among the reports presented at a recent session of the Scientific Council of the Central Aerological Observatory: 1) N. Z. Pinus -- an experimental investigation of the wind field at altitudes of 7 to 11 km, certain peculiarities of the mesostructure of the wind field, and the statistical characteristics of horizontal and veritical wind fluctuations in the jet stream zone in different regions of the European USSR and Siberia; 2) S. M. Shmeter -- the process of cumulonimbus cloud development and a proposed model of the structure of the fields of meteorological elements near the upper third of such clouds at different stages of development; 3) V. D. Reshetov -- the use of hydrodynamic equations for determining the interdependence of ageostrophic, nonstatic, and nonstationary atmospheric motions and a more

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AID Nr. 981-3 3 June

CONFERENCE AT CENTRAL AEROLOGICAL [Cont'd] S/050/63/000/004/002/002

accurate form proposed for writing such equations; 4) I. F. Kvaratskheliya -- conditions for the formation of sharp changes of vertical wind shear in the upper half of the troposphere over the Transcaucasus; 5) A. I. Ivanovskiy and A. I. Repnev -- the hydrodynamics of the upper atmosphere, taking into account the chemical reactions occurring under solar influence; 6) V. V. Kostarev, A. M. Borovikov, and A. B. Shupyatskiy -- certain radar criteria for identifying the hail content of clouds and criteria for evaluating the effect of cloud modification; and 7) A. G. Gorelik -- certain results of radar investigations of the wind field at altitudes of 50 to 700 m. [ET]

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ACCESSION NR: AT4033564 S/2922/63/009/000/0145/0153

AUTHOR: Gorelik, A. G.; Kostarev, V. V.; Potemkin, I. G.; Chernikov, A. A.

TITLE: Increasing the sensitivity of the receiver of an aerological radar set

SOURCE: Vsesoyuznoye nauchnoye meteorologicheskoye soveshchaniye. 1st, Leningrad, 1961. Pribory* i metody* nablyudeniy (Instruments and methods of observation); trudy* soveshchaniya, v. 9, Leningrad, Gidrometeoizdat, 1963, 145-153

TOPIC TAGS: meteorology, aerology, meteorological instrument, meteorological radar, signal-to-noise ratio, radar sensitivity

ABSTRACT: The use of ordinary radar apparatus in aerology for observation of many meteorological objects is impossible because of inadequate sensitivity. The signal reflected from the object often is so weak that it is lost in the instrument noise. The authors therefore have devised a signal accumulator which improves the signal-to-noise ratio at the output of the receiver of an ordinary centimeter-range radar set. The signal accumulator makes it possible to detect a weak radar echo, determine the coordinates of its source and obtain data on the strength of the reflected signal. A simplified block diagram of the detection of a weak signal by use of this device is shown in Fig. 1 of the Enclosure. The amplitude characteristics and gain of the signal accumulator are described. A very detailed

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ACCESSION NR: AT4033564

circuit diagram accompanies a text which fully describes the components and operation of the device. Orig. art. has: 18 formulas and 4 figures.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory)

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SUB CODE: ES, EC NO REF SOV: 003 OTHER: 000

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ACCESSION NR: AT4033564

ENCLOSURE: 01

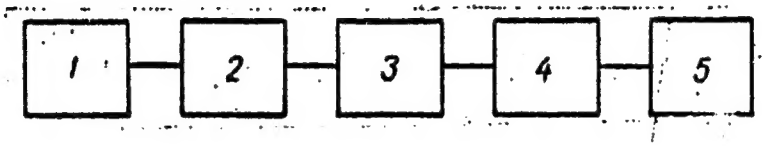

Fig. 1. Simplified block diagram for the detection of a faint signal.
1 - radar receiver; 2 - selector stages of signal accumulation device;
3 - integrator; 4 - shaping device; 5 - averaging device, employing quartz filter.

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L 00714-65 EWT(1)/FCC GW

ACCESSION NR: AT5008979 UR/2789/64/000/057/0019/0023

AUTHOR: Gorelik, A. G.; Kostarev, V. V.; Chernikov, A. A.

TITLE: The coordinate-Doppler method of wind observations

SOURCE: Tsentral'naya aerologicheskaya observatoriya. Trudy, no. 57, 1964. Radiolokatsionnyye metody aerologicheskikh nablyudeniy (Radar methods of aerological observation), 19-23

TOPIC TAGS: meteorological measurement, wind velocity, atmospheric turbulence, rawin sonde, Doopler effect, weather balloon

ABSTRACT: Observation of pilot balloons can supply information not only on the average wind conditions but also information about atmospheric turbulence. However, the widely used coordinate method for wind observations has several essential shortcomings, the most important of which is the impossibility of continuous velocity registration. However, by using the Doppler effect, a method is provided by which accurate continuous registration of the projection of the probe's velocity in the direction of the radar beam can be achieved. Tests have shown that one can achieve a very accurate continuous registration of the projection of the probe's velocity in the direction of the radar beam by using the Doppler

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effect. Nevertheless, this reading alone (using only one radar station) cannot give the direction in which the pilot balloon is moving. Combining the two methods, the authors were able to devise a new atmosphere-probing method which not only provides average wind velocities but also turbulence parameters at various [illegible]. Following a general theoretical derivation of the underlying principles, the authors estimate the accuracy of the method and describe the block-diagram of a device suitable for carrying out the necessary measurement. Orig. art. has 15 formulas and 1 figure.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory)

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NO REF SOV: 000 OTHER: 000

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